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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/816,222	04/01/2004	Minoru Koyama	9319G-000757	7315
27572	7590	09/20/2006	EXAMINER	
HARNESS, DICKEY & PIERCE, P.L.C.			LAM, CATHY FONG FONG	
P.O. BOX 828			ART UNIT	PAPER NUMBER
BLOOMFIELD HILLS, MI 48303			1775	

DATE MAILED: 09/20/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

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## Office Action Summary

Application No.

10/816,222

Applicant(s)

KOYAMA ET AL.

Examiner

Cathy Lam

Art Unit

1775

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 13 April 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 4,6-9,13 and 14 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 4,6-9,13 and 14 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 01 April 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>2-6-06, 7-5-06</u> . | 6) <input type="checkbox"/> Other: _____  |

In view of the amendment and remarks filed on April 13, 2006, the pending claims continue to be unpatentable as following:

***Claim Rejections - 35 USC § 112***

1. Claims 4 and 6-9 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 4, it is structurally indefinite, as is unclear what "a circuit pattern and an insulating pattern" is referring to? It is unclear whether the circuit pattern and the insulating pattern are two separate layers, and whether or not the two patterns are coincide with one another (i.e. one layer over another)? Clarification is required.

Claims 6-9 are indefinite, since the circuit pattern which forms the passive components, is made from at least one of a conductive material and a semiconductive material as cited in claim 4, it is unclear whether or not the conductive material and the semiconductive material in claims 6-9 are referring to the same materials in claim 4?

***Claim Rejections - 35 USC § 102/103***

2. Claims 4, 6-9 and 13-14 are rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Hiraoka et al (US 6835889).

Hiraoka discloses a composite wiring substrate on its surface a passive element is formed.

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The passive element can be a condenser, a coil (or inductor), and a resistor, etc. (col 1 L 7-10). Conductive functional element such as electrodes or wiring may also be formed onto the substrate surface (col 7 L 27-28).

The composite wiring substrate is comprised of a porous base material and a polymeric material (col 6 L 16-21 & col 8 L 61-67). The porous base material can be made from a ceramic material such as silica or alumina, etc. (col 6 L 9-12). The porous base material can also be made from ceramic fibers (col 21 L 65-col 22 L 13).

The polymeric material such as a thermoplastic resin or a curable resin (or thermosetting resin) is used for impregnating the porous base material (col 8 L 61-col 9 L 6). The examiner is taking the position that the polymeric material resembles the second liquid material.

All of the above passive elements are made from conductive materials. The composite wiring substrate having the passive elements is formed by filling the conductive material into some regions of the porous base material (col 3 L 10-12 & L 17-19). The conductive material is comprised of a metal, a semiconductive material (ie. highly doped silicon), conductive ceramics (ie. ITO), and a resin binder in a solvent (col 7 L 33-36 & col 10 L 24-32). The conductive material can also be used as an electrode, a wiring or a high-permeability material (col 7 L 27-28 & col 8 L 32-42 & col 14 L 13-20). The conductive material is in a form of a fluid (or a printable paste) (col 7 L 43-45).

Hiraoka teaches the present invention but is silent about a non-affinity characteristic with respect to said first liquid material. The examiner is taking the

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position that such limitation is inherent since Hiraoka clearly teaches a solvent is being used in the conductive material. The examiner is taking the position that the solvent resemble the non-affinity first liquid material as claimed.

Hiraoka discloses the present invention but is silent about the circuit pattern includes an active element.

In view of the prior art teaching, Hiraoka states that the composite wiring substrate is used for mounting components, Hiraoka further teaches that an antenna element (i.e. an active element) is formed onto the conductive material filled region (col 16 L 6-18). Hiraoka clearly stated (or at least hinted) that an active element is involved.

### ***Response to Arguments***

3. Applicant's arguments filed on April 13, 2006 have been fully considered but they are not persuasive. The above office action is believed to have the issues answered in the remarks.

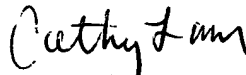
4. Applicant raises couple issues, that are (A) the prior art does not teach both a circuit pattern and an insulating pattern that permeated beneath the substrate surface, and (B) the prior art does not teach a non-affinity liquid in the conductive material.

5. (A) is rejected under 112 2<sup>nd</sup> paragraph, where (B) has been addressed in the above office action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Cathy Lam whose telephone number is (571) 272-1538. The examiner can normally be reached on 9am-6pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Deborah Jones can be reached on (571) 272-1535. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
Cathy Lam  
Primary Examiner  
Art Unit 1775

cfl  
September 14, 2006